

NORTON SOUND AREA COMMERCIAL AND SUBSISTENCE
SALMON FISHERIES MANAGEMENT PLAN 1993

Alaska Department of Fish and Game
Division of Commercial Fisheries, AYK Region
Charles Lean - Area Management Biologist
Fred Bue - Asst. Area Biologist
P.O. Box 1148
Nome, Alaska 99762
Phone: 907-443-5167

Alaska Department of Fish and Game
Division of Commercial Fisheries
Seasonal Field Office
Brooke Everest - Unalakleet Crew Leader
P.O. Box 243
Unalakleet, Alaska 99684
Phone: 907-624-3921

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INTRODUCTION

The Norton Sound area extends from Cape Douglas south to Canal Point Light and includes over 500 miles of coastline (Figure 1). This area is divided into six subdistricts. Each subdistrict contains at least one major spawning stream with commercial fishing effort located in the ocean near stream mouths.

Five species of Pacific salmon occur in the area. Pink salmon are the most abundant species. The even year returns are stronger than the odd year returns which have declined drastically since 1983. In recent years, chum salmon have also declined in abundance. Coho have been accounted for the most commercial poundage for the last two years. Chinook salmon are the third most important commercial species. Sockeye salmon are in low abundance and rarely occur in streams other than the Sinuk and Pilgrim River systems where small spawning stocks exist.

Staffing for salmon management within Norton Sound includes two management biologists, two half time field office assistants and five seasonal employees during the summer months. Anticipated management projects in 1993 include: Kwiniuk River counting tower; periodic aerial surveys of index spawning streams; catch sampling and monitoring efforts at Unalakleet and Moses Point; and test fishing on the main stem of the Unalakleet River.

STATUS OF STOCKS AND FISHERIES

Commercial fishing began in 1961 in the Unalakleet and Shaktoolik Subdistricts; 1962 in the Golovin, Moses Point, and Norton Bay Subdistricts; and in 1964 in the Nome Subdistrict.

The 1992 combined commercial catch of 199,933 salmon of all species included 4,541 chinook, 296 sockeye, 105,418 coho, 6,284 pink and 83,396 chum salmon. The chinook harvest was 29% and 45% below the 1987-1991 and 1982-1991 averages, respectively. The coho harvest was 133% and 114% above the recent five and ten year averages. The pink salmon harvest was 60% and 89% below the recent five and ten year averages. The chum harvest was 3% and 38% below the recent five and ten year averages. Historical catch data for the Norton Sound District is presented in Table 1.

During the 1992 season, 110 fishermen made at least one delivery. The number of participating fishermen during 1992 tied for the lowest effort on record since total effort has been documented (1977 to present). The average effort during the previous 10 years (1982-1991) has been 151 fishermen. The low effort during the 1992 season can be attributed primarily to the lack of salmon markets and depressed chum salmon runs in the Northern subdistricts.

The cold temperatures and relatively small amounts of snowfall during the winters of 1981-1982 and 1983-1984 apparently contributed to the emergence of an odd-even year cycle of pink salmon returns. The past three odd year returns were well below the returns experienced during the 1978-1984 period. Even year returns

were at high levels during the same time period; however, even with a record pink salmon return in 1984, the resultant 1986 return was well below the 5 year (1981-1985) and 10 year (1976-1985) averages.

The pink salmon market in Norton Sound has historically been very sporadic; therefore, pink salmon catch statistics do not accurately reflect actual return strengths for this species from year to year. However, fishing effort and salmon markets have been fairly consistent in Subdistricts 5 and 6 for over ten years. Thus, catch statistics, especially in the Unalakleet Subdistrict, are an index of annual returns of chinook, coho, and chum salmon.

Commercial fishermen received approximately \$448,395 for their catch in 1992. These earnings rank as the second lowest value on record since 1976, and were 11% below the 1987-1991 average of \$503,673. This low fishery value was attributed to the lack of competitive markets, low prices paid per pound for all salmon species, and the poor chum returns in Subdistricts 1, 2 and 3. Prices paid to the fishermen averaged \$0.66 per pound for chinook, \$0.80 per pound for sockeye, \$0.33 per pound for coho, and \$0.22 per pound for chum salmon.

OUTLOOK FOR 1993

Run forecasts and harvest projections for the 1993 commercial salmon season are based on qualitative assessments of brood year returns, subjective determinations of fresh water over-wintering survival and ocean survival, and projections of local market conditions. Salmon buyers will probably operate in only half the subdistricts of Norton Sound during 1993. The chinook return is expected to be average and commercial harvests are expected to range from 6,000 to 8,000. Pink salmon are expected to be strong for the weak odd year cycle. In recent years, there has been no market for Norton Sound pink salmon and only an experimental market is expected during 1993. Should a market develop for pink salmon or for any species where a surplus exists, harvests could markedly increase. Chum and coho salmon escapements were not observed during the 1993 brood's parent year (1989) due to high water and inclement weather conditions. A weak return of chum salmon is expected, but the 1992 return and age composition of the coho return indicates an above average coho return. Harvests of chum are expected to range from 50,000 to 80,000. Commercial coho harvests are expected to range from 50,000 to 80,000.

GENERAL MANAGEMENT STRATEGIES

Each subdistrict is managed for a commercial target species for portions of the season. In order to utilize the pink salmon resource, additional fishing periods can be provided in which only gill nets with 4-1/2" mesh or less may be fished.

The basic regulation that controls the commercial salmon harvest is the scheduled weekly fishing period. Once the season is underway, commercial fishing is generally allowed 4 days per week, from 6:00 p.m. Monday to 6:00 p.m. Wednesday and from 6:00 p.m. Thursday to 6:00 p.m. Saturday. The Nome and Moses Point

Subdistricts are exceptions to this fishing schedule, where commercial fishing is allowed only 2 days per week, from 6:00 p.m. Monday to 6:00 p.m. Tuesday and from 6:00 p.m. Thursday until 6:00 p.m. Friday. If a market for pink salmon develops this summer, fishing periods may be staggered or rotated in Subdistricts 2 through 6 if the market is limited and run strength allows, in order to distribute the harvest over as much of the Sound as possible.

Regulations provide for the commercial fishing season to be opened by emergency order between June 8 and June 20. However, due to late breakups during recent seasons, the commercial fishery has opened by emergency order after June 20, during some years. If breakup timing in Norton Sound is normal in 1993, and runs are not judged to be early and strong, the opening date will be approximately June 17 for chinook, July 1 for chum, July 5 for pink and July 26 for coho salmon. The season ends by regulation on August 31 in the Nome, Golovin, and Moses Point subdistricts and on September 7 in the Norton Bay, Shaktoolik, and Unalakleet subdistricts. If an early ice breakup occurs in Norton Sound, fishermen will be encouraged to relay early subsistence catch data to Department representatives. Given the poor chum salmon return that is expected, no commercial salmon openings are expected prior to August 1 in the Nome and Moses Point Subdistricts.

Timing and abundance of the chinook salmon run will be monitored by Department personnel conducting fishermen interviews and operating a test net in the Unalakleet River. Once increasing catches have been observed for at least 7 days at the mouth of the Unalakleet River, the Unalakleet and Shaktoolik fisheries will be opened by emergency order.

Norton Bay, Moses Point and Golovin Subdistricts are managed initially for chum salmon and are not opened to fishing until chums are observed entering freshwater in those Subdistricts. The Nome Subdistrict opens by regulation after July 1 although no commercial openings are anticipated during July. Initial fishing periods in any subdistrict may be only 24 hours in duration until run strength and timing information allows an assessment of run strength.

Reduced fishing time may be required for conservation purposes if run magnitudes are below average and fishing effort remains high. Effort, catch and escapement data will be compared with previous seasons to assess relative return strength for the current season. Action to bolster chum salmon escapements should be initiated on or before the second week of July. By that time roughly 50% of the chum return should have entered the rivers and limited time remains for effective management action.

Aerial surveys of index spawning streams will begin in early July and will continue through peak spawning periods in late July for chinook, chum, and pink salmon and mid-September for coho salmon. Catch and effort data from the commercial fishery will be compiled after each fishing period for each subdistrict. Counts of salmon moving past the Kwiniuk River counting tower, and the Unalakleet River test fishery catches will be radioed on a daily basis to the Nome office. In season commercial catch rates and various escapement projects are used as primary escapement indices since aerial surveys usually take place late in the season after effective conservation actions could be implemented in

the fishery. Escapement objectives for chum salmon for selected Norton Sound index streams are presented in Table 2.

Commercial fishermen may not fish for subsistence purposes during weekly closures of the commercial fishing season. The purpose of this regulation is to minimize the illegal sale of subsistence caught salmon and insure adequate spawning escapements. Commercial fishermen may retain a portion of their commercial catch for personal use or fish for subsistence before and after their commercial fishing season. Also, persons not engaged in commercial salmon fishing as CFEC permit holders, crew members, or tender boat personnel may subsistence fish 7 days a week in all subdistricts, except the Nome subdistrict, and in the Unalakleet River. The Alaska Board of Fisheries adopted a regulation in December 1984 allowing commercial fishermen to subsistence fish in the Unalakleet and Shaktoolik River drainage 7 days per week from July 15 to August 1 with beach seines and gill nets with mesh size of 4-1/2 inches or less. More recently, the Board adopted a regulation requiring commercial salmon fishermen to report their unsold salmon catch on their fish tickets. Unanchored subsistence nets are prohibited in the Unalakleet River from June 1 to July 15.

An informational program will be broadcast over a Nome public radio station to inform fishermen of current regulations, catches, escapements and department activities. Also, permanent personnel will periodically visit each fishery to disseminate fishery information and answer questions. The Unalakleet office will be open daily, except Sunday, throughout the season.

SPECIAL MANAGEMENT STRATEGIES

Nome Subdistrict

The cumulative fishing pressure of commercial, subsistence and sport fishing on local Nome Subdistrict stocks, which are less abundant than in other portions of Norton Sound, requires special management strategies. Unlike other subdistricts, nearly all the spawning streams are accessible by road to subsistence and sport fishermen. During the last five years (1988-1992), an average of 171 permits have been issued yearly for subsistence fishing in the Nome subdistrict. Reported subsistence harvests have averaged over 7,500 salmon during the past five years. The commercial fishery, which targets chum salmon during most years, has been managed very conservatively due to the importance of subsistence fishing, the limited abundance of local chum salmon stocks and the interception of other stocks bound for Kotzebue Sound, Port Clarence and eastern Norton Sound fisheries. Commercial catches have averaged approximately 4,700 chum salmon over the five years, 1985 to 1989. There was no buyer during the 1990 season, the commercial fishery was closed during 1991 and during 1992 commercial fishing was not allowed until August 3 with only 185 chum salmon being harvested.

Chum salmon escapement objectives for the seven major index streams (Sinuk, Snake, Nome, Flambeau, Eldorado, Bonanza and Solomon Rivers) totals about 18,000 fish. Maintaining escapements at these levels ensures that sufficient spawning will occur to perpetuate future salmon runs. During the five years prior to 1991, the Nome and Eldorado Rivers have averaged less than 2/3 of the escapement

objective. Only very conservative fisheries management reversed the declining escapement trend during the past two seasons.

Although management of the Nome Subdistrict fisheries has grown more conservative over the last ten years, chum salmon escapements have dropped off dramatically. During the 1990 season, chum salmon escapement was generally less than one-quarter of the escapement goals set for the area. The fishery managers responsible for the area decided to change the management strategy used to manage the Subdistrict during the chum salmon migration in 1991. All rivers in the Subdistrict with subsistence salmon fisheries closed June 15 and remained closed until the escapement goal for a particular stream seemed assured or until the chum migration was no longer impacted. As escapement goals were approached in individual rivers, a relaxation of the restrictions on those rivers occurred. In those streams where escapements remained poor, the closures remained in effect until August 1. Chum escapements were monitored by aerial surveys and boat surveys throughout the summer. The escapements in 1991 were much improved, with most streams meeting their chum escapement goals. However, subsistence chum catches were slightly more than one-half the long term average. During 1992, a similar approach was used to manage the fishery. The record run of pink salmon that materialized during the second week of July allowed most streams to be opened for subsistence fishing except for chum salmon by beach seine. Escapement indices for chum salmon were generally overwhelmed by the numbers of pinks and were not meaningful as a result. Management of the Nome Subdistrict will closely parallel that of the 1991 season. Permit catch limits for Nome subdistrict (also Port Clarence district) streams are presented in Table 3.

Golovin Subdistrict

Poor market conditions as a result of the projected commercial harvest limit of 10,000 chum salmon influenced buyers to not operate at Golovin during 1992. A single catcher seller operated, but never approached the harvest limit. This same limit is expected to remain in place until the declining trend of the chum salmon stock is reversed. If there is only a single buyer, the opening of the salmon season may be delayed until early July so that the pink and chum salmon harvests could both be maximized. Commercial pink salmon fishing may close if the incidental harvest of chum salmon is judged to be excessive.

Moses Point Subdistrict

Poor escapements on both the Kwiniuk and Tubutulik Rivers have been a concern in the management of the Moses Point chum fishery for several years. Although the Kwiniuk River escapement goal has been decreased from 25,000 to 19,500 chum salmon, that goal has only been met twice since 1984. Commercial fishing will likely remain closed through June and July to protect the chum salmon stock. Should adequate escapement occur additional fishing periods would be allowed.

Subsistence closures will be inacted if the chum salmon escapement is projected to fall significantly below the escapement requirements set for the Subdistrict. If subsistence closures are deemed necessary, an attempt will be made to minimize the impact on the subsistence harvest of pink salmon by allowing directed fishing on those stocks.

Unalakleet and Shaktoolik Subdistricts

During the chinook salmon run, increased subsistence fishing effort was observed in the lower Unalakleet River in 1983 and 1984. As many as 30 nets were observed in the first mile of the river. Household subsistence surveys reported chinook salmon harvests of 1,868 and 1,650, respectively. These represent the largest catches on record and more than double the previous 5 year average catch (1978-1982). Approximately 80% of the 1983-84 harvest was taken from the Unalakleet River with the average fisherman reporting a harvest of about 25 chinook salmon. During the 1985-1988 period, large concentrations of nets were observed in the lower mile of the Unalakleet River. There was concern that the increasing subsistence harvest coupled with the commercial harvest might reduce escapement to such a degree that the reproductive potential of the stock may be damaged. During the 1986 and 1987 seasons, nets apparently left untended were found to contain decomposing chinook salmon. For these reasons, in addition to concern for the reproductive potential of this highly valued salmon species, the Alaska Board of Fisheries adopted several regulations to assist in the management of the Unalakleet chinook salmon fisheries. Provisions for directing the commercial fishery to other species, a reduction in the sport bag limit and a closed period each week during the subsistence fishery were the regulation changes intended to ensure escapement and allow adequate but non-wasteful subsistence use of the resource.

Beginning in 1990, a few fishermen began drifting gill nets through the deep holes where chinook salmon mill before moving up river to spawn. The large scale of this fishery and its timing after the more traditional commercial and subsistence fisheries again caused concern that the escapement needs were not being met. Prior to the 1993 season, a new regulation was put in place to prohibit the use of unanchored subsistence nets in the Unalakleet River from June 1 to July 15.

Unalakleet and Shaktoolik Subdistricts will be managed alike since past studies have shown salmon bound for these subdistricts intermingle and that harvests in one subdistrict most likely will affect the other. Only special problems like the one outlined above will cause the manager to target a single subdistrict with an action. Commercial salmon fisheries in June will be assumed to target chinook salmon, those in July, chum and in August the fisheries will target coho.

Pink Salmon Fishery

During some years, the Norton Sound pink salmon run can be very strong. These runs occur during the first three weeks of July, but high quality pink salmon are only available for less than two weeks. Any commercial fishery targeting these salmon will necessarily be very intense and of short duration. The staff will work with the processor to maximize efficiency of both the buying vessels and the fishermen. Fishermen may find it necessary to move with the fishery similar to a herring fishery. The staff will attempt to communicate the status of the fishery and anticipated management actions in a timely manner. Given a poor chum salmon return and a significant incidental chum salmon harvest, the chum salmon fishery may have to be closed up to several periods after the pink salmon run has passed to allow for adequate chum escapement to occur prior to the coho run.

Table 1. Commercial salmon catches by species, Norton Sound District, 1961-1992.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,327	48,332	101,801
1962	7,286	18	9,156	33,187	182,784	232,431
1963	6,613	71	16,765	55,625	154,789	233,863
1964	2,018	126	98	13,567	148,862	164,671
1965	1,449	30	2,030	220	36,795	40,524
1966	1,553	14	5,755	12,778	80,245	100,345
1967	1,804		2,379	28,879	41,756	74,818
1968	1,045		6,885	71,179	45,300	124,499
1969	2,392		6,836	86,949	82,795	178,972
1970	1,853		4,423	64,908	107,034	178,218
1971	2,593		3,127	4,895	131,362	141,977
1972	2,938		454	45,182	100,920	149,494
1973	1,918		9,282	46,499	119,098	176,797
1974	2,951		2,092	148,519	162,267	315,829
1975	2,393	2	4,593	32,388	212,485	251,861
1976	2,243	11	6,934	87,916	95,956	193,060
1977	4,500	5	3,690	48,675	200,455	257,325
1978	9,819	12	7,335	325,503	189,279	531,948
1979	10,706		31,438	167,411	140,789	350,344
1980	6,311	40	29,842	227,352	180,792	444,337
1981	7,929	56	31,562	232,479	169,708	441,734
1982	5,892	10	91,690	230,281	183,335	511,208
1983	10,308	27	49,735	76,913	319,437	456,420
1984	8,455	6	67,875	119,381	146,442	342,159
1985	19,491	166	21,968	3,647	134,928	180,200
1986	6,303	233	35,600	41,260	146,912	230,308
1987	7,080	207	24,279	2,260	102,457	136,283
1988	4,096	1,252	37,247	74,604	107,967	225,166
1989	5,707	265	44,091	123	42,625	92,811
1990	8,895	434	56,712	501	65,123	131,665
1991	6,608	203	63,647	221	86,871	156,789
1992	4,541	296	105,418	6,284	83,394	199,933
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5-Yr Avg ^a	6,396	472	45,195	15,542	81,009	148,587
10-Yr Avg ^b	8,239	280	49,284	54,919	133,610	246,332

^a 1987-1991

^b 1982-1991

Table 2. Norton Sound chum salmon escapement objectives.^a

Subdistrict	Stream	Escapement Objective
1) Nome	Sinuk	4,500
	Snake	1,000
	Nome	2,000
	Flambeau	3,250
	Eldorado	5,250
	Bonanza	1,500
	Solomon	550
2) Golovin	Fish	17,500
	Niukluk	8,000
	Boston	2,500
	Kachavik	2,500
3) Moses Point	Kwiniuk ^b	19,500
	Tubutulik	12,000
4) Norton Bay	Ungalik	2,500
	Inglutalik	8,500
5) Shaktoolik	Shaktoolik	11,000
6) Unalakleet	North River ^b	3,500
	Upper Unalakleet	13,000
	Old Woman	2,000

^a Based on aerial survey counts which represent minimum escapement estimates unless otherwise noted.

^b Based on tower counts.

Table 3. Nome Subdistrict, Port Clarence District subsistence permit limits.

Nome Subdistrict

Nome River	250 salmon/family (no more than 20 chum and 20 coho)
Snake River	100 salmon/family (no more than 20 chum and 20 coho)
Sinuk River	100 salmon/family
Cripple River	100 salmon/family
Solomon River	100 salmon/family (no more than 20 chum and 20 coho)
Penny River	100 salmon/family
Flambeau River	200 salmon/family
Bonanza River	200 salmon/family
Eldorado River	200 salmon/family
Marine Waters	No catch limitations

Port Clarence District

Pilgrim River	20 salmon/family
Salmon Lake	No salmon/closed after 7/15
Kuzitrin River	100 salmon/family
Above the confluence of the Pilgrim River	

Note: All waters of the Nome Subdistrict are subject to weekly closures from June 15 to August 31. The Sinuk River is outside the Nome Subdistrict boundary and, therefore, subsistence fishing can occur 7 days a week. The Port Clarence District is also subject to weekly closures from July 1 until August 15.

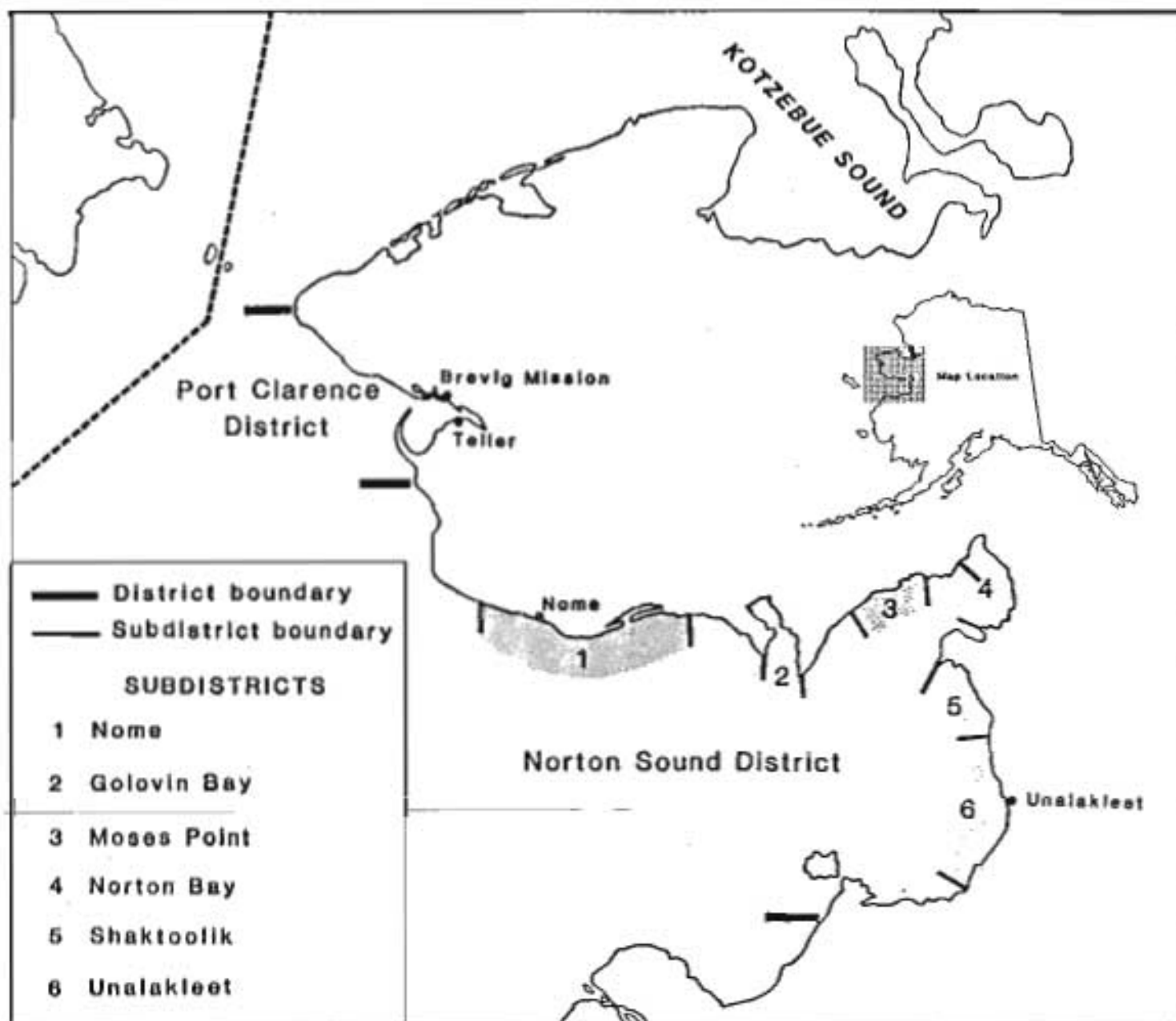


Figure 1. Norton Sound commercial salmon fishing subdistricts.